

IN THE DRAWINGS:

On Fig. 1, delete all of the lines within components 30, 40, 50, 60 and inline programming apparatus 20, as shown.

On Fig. 1, delete all the portions as shown around inline programming apparatus 20 and component 60.

On Fig. 1, add two double lines from inline programming apparatus 20 to component 60, as shown.

IN THE CLAIMS:

Please cancel claims 1-18.

Please add claims 19-38 as follows:

19. (New) A surface mount production system having a conveyor for receiving and moving a printed circuit board through the surface mount production system, the surface mount production system for programming and assembling programmable electronic devices on the printed circuit board, the surface mount production system comprising:

a stencil printer machine, communicably coupled to the conveyor, for applying solder paste to the printed circuit board;

a chip shooter machine for performing a high speed placement of circuit devices and elements on the printed circuit board;

a fine pitch placement machine that places circuit elements and devices at low speed with high accuracy;

a reflow oven that cooks the solder paste, thereby soldering to the board all the circuit elements and devices; and

an inline programming system communicably coupled to any one or more of the conveyor, the stencil printer machine, the chip shooter machine, the fine pitch placement machine and the reflow oven, the inline programming system having one or more concurrently programmable sites for programming the programmable electronic devices, wherein each programmable electronic device is concurrently and independently programmable.

20. (New) The system of claim 19 further comprising a pickup and placement device for picking up the programmable electronic devices from the one or more concurrently programming sites and placing the programmable electronic devices on the printed circuit board to form a printed circuit board assembly.

21. (New) A system for use within a surface mount production line having a conveyor for receiving a printed circuit board, and for moving the printed circuit board through the surface mount production line, the system comprising:

a concurrent programming system containing first and second programming sites;

a pick and place system for picking up first and second electronic devices from one or more tray shuttles, and for placing the first and second electronic devices within the first and second programming sites, respectively, the first and second electronic devices being programmable in a concurrent manner and independent of each other; and

a central control unit for communicating with the conveyor, the concurrent programming system, and the pick and place system, the central control unit directing the conveyor to move the printed circuit board permitting the pick and place system to place the first and second electronic devices on the printed circuit board after the devices are programmed.

22. (New) The system of claim 21 wherein the concurrent programming system further comprises a controller for each of the first and second programming sites for independently programming each of the first and second programming sites.

23. (New) The system of claim 21 further comprising tracks or rails enabling movement of the pick and place device within the system.

24. (New) The system of claim 21 further comprising one or more sensors for detecting when the conveyor delivers a printed circuit board to the system.

25. (New) The system of claim 21 further comprising four parallel asynchronous processes upon which operations of the system depend.

26. (New) The system of claim 21 wherein the pick and place device includes self-teaching capability for determining the precise locations at which to pick and place the first and second programmable devices.

27. (New) The system of claim 22 wherein the pick and place device further comprises a controller for servicing requests from the concurrent programming system and the conveyor.

28. (New) The system of claim 27 wherein the system making a request provides the location from which to pick up a device.

29. (New) The system of claim 21 further comprising employing fiducial techniques to determine the location at which the programmable device is to be placed.

30. (New) A method of programming a programmable electronic device, said method comprising:

receiving said programmable electronic device from a receiving media;

placing said programmable electronic device within a programming site using a pick and place system;

programming said programmable electronic device in the programming site;

and

moving a printed circuit board wherein said pick and place system places said programmable electronic device on said printed circuit board after said programmable electronic device is programmed, wherein said steps of receiving, placing, programming and moving rely on four parallel asynchronous processes on which operations of the system depend.

31. (New) The method of claim 30 further comprising programming a second programmable electronic device in a concurrent manner with, and independent of said programmable electronic device.

32. (New) The method of claim 30 further comprising moving said pick and place device along a track or rail.

33. (New) The method of claim 30 further comprising testing said programmable electronic device prior to placement on the printed circuit board.

34. (New) The method of claim 30 wherein said programmable electronic device is a programmable logic array, and wherein the step of programming includes the step of transferring an arrangement of gating logic instructions into the programmable logic array.

35. (New) A system for programming and assembling one or more programmable devices on a printed circuit board, the system comprising:

a programming system having one or more programming sites;

a pick and place system for picking the one or more programmable devices from one or more receiving media, and for placing the one or more programmable devices within the one or more programmable sites, the pick and place system computing the location and orientation to place the one or more programmable devices on the printed circuit board using fiducial recognition techniques; and

a central control unit for communicating with the concurrent programming system and the pick and place system, and for coordinating placement of the one or more programmable devices on the printed circuit board after the devices are programmed by the programming system.

36. (New) The system of claim 35 wherein the programming system programs the one or more programmable devices by transferring a sequence of operating codes into a memory of the programmable devices.

37. (New) The system of claim 35 wherein the pick and place device includes self-teaching capability for determining the precise locations at which to pick and place the programmable devices.

38. (New) The system of claim 35 further comprising a fiducial system for determining the location on the printed circuit board at which the programmable devices are to be placed.

REMARKS

Line deletions and additions have been made to improve the form of the drawings. Applicant requests approval of the proposed amendments to Figure 1 with red marking, as indicated on the copy attached hereto.

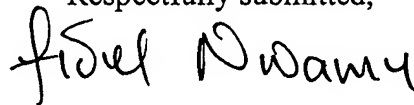
New claims 19-37 are submitted herewith for entry and examination. Among other portions of the specification, independent claims 21, 30 and 35 are supported by Fig. 2, page 6, lines 4-20, and page 13, lines 3-17, respectively. Applicant respectively submits that this amendment adds no new matter, and is not narrowing with regard to prior claims.

CONCLUSION

Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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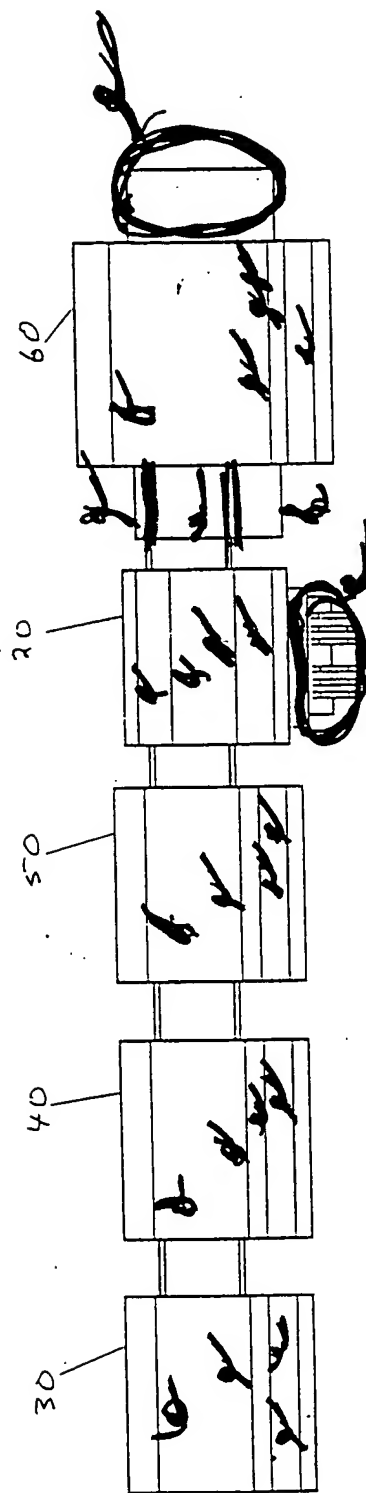


Figure 1